What is claimed is:

1. A system for remotely controlling a plurality of locomotives via first and second half duplex wireless channels comprising:

a plurality of controllers, one for installation on-board of each of the locomotives, wherein each controller comprises a transmitter, a receiver and a timing means,

a plurality of control units, each comprising a transmitter and a receiver, wherein each of said control units is associated with one of said controllers for transmitting and receiving signals for controlling one of said locomotives,

wherein each timing means is synchronized by a common source and wherein each controller is assigned a time slot for sending a polling message to said associated control unit and receiving a responsive transmission therefrom; and

a repeater comprising a transmitter, a receiver, and a microprocessor, wherein said repeater receives a signal from one of said controllers and control units on said second half duplex wireless channel and re-transmits said signal on said first half duplex wireless channel.

2. The system of claim 1 wherein said repeater has an address code and only re-transmits a received signal containing said address code.

3. The system of claim 1 wherein said repeater has an address code and said microprocessor reads a portion of each signal received to determine whether said signal contains said address code.

4. The system of claim 3 wherein said repeater only re-transmits a received signal containing said address code.

5. The system of claim 1 wherein said repeater further comprises a timing means and a GPS receiver.

6. The system of claim 5 wherein said repeater employs a signal from said GPS receiver to synchronize said timing means and monitors said time slots on said second half duplex channel.

7. The system of claim 6 wherein said repeater monitors said second half duplex channel for a predetermined period of time during each of said time slots.

8. The system of claim 6 wherein said repeater monitors said second half duplex channel at the beginning of each of said time slots for a predetermined period of time.

9. The system of claim 8 wherein said repeater has an address code and, upon receiving a signal containing said address code, re-transmits said signal on said first half duplex channel.

10. The system of claim 9 wherein said repeater masks off after making said re-transmission and unmasks at a later time within said time slot to monitor said second half duplex channel.

11. The system of claim 8 wherein said repeater has an address code and, upon not receiving a signal containing said address code, masks off until the beginning of the next successive time slot, when the repeater unmasks to monitor said second half duplex channel.

12. The system of claim 1 wherein each of said control units monitors said first half duplex channel at the beginning of its respective time slot a predetermined period of time.

13. The system of claim 12 wherein each of said control units, upon receiving a signal containing from its respective controller, transmits a response to said signal.

14. The system of claim 13 wherein each of said control units masks off after making said responsive transmission and unmasks at the beginning of its next respective time slot.

15. The system of claim 13 wherein each of said control units masks off after making said responsive transmission and unmasks just after the beginning of its next respective time slot.

16. The system of claim 1 wherein each of said controllers is masked off during the time slots assigned the other controllers in the system.

17. The system of claim 6 wherein said repeater has a memory containing an address for each of said plurality of controllers and control units and the time slot assigned to each of said controllers and control units and wherein said repeater monitors said second half duplex channel during each of said time slots for a signal from the controller or control unit assigned to the respective time slot.

18. The system of claim 7 wherein said predetermined period of time equals about seven milliseconds.

19. The system of claim 8 wherein said predetermined period of time equals about seven milliseconds.

20. A system for remotely controlling a plurality of locomotives within a geographic zone via first and second half duplex wireless channels comprising:

a plurality of controllers each comprising a transmitter, a receiver, a memory containing coordinates of said geographic zone and a plurality of sub-zones within said geographic zone, wherein each of said controllers is for installation on one of said locomotives;

a GPS receiver operably connected to each controller;

a plurality of control units each comprising a transmitter and a receiver, wherein each of said control units is associated with one of said controllers for transmitting signals thereto and receiving signals therefrom; and

a plurality of repeaters located within said geographic zone, wherein each of said repeaters has an address code and comprises a transmitter, a receiver, a microprocessor.

21. The system of claim 20 wherein each of said repeaters is capable of receiving signals from said controllers and control units on said second half duplex wireless channel but only re-transmits on said first half duplex wireless channel those signals containing its respective address code.

22. The system of claim 20 wherein each of said repeaters is located in a different sub-zone.

23. The system of claim 21 wherein each of said repeaters is located in a different sub-zone.

24. The system of claim 20 wherein each of said plurality of controllers periodically receives coordinates of the geographic position of its respective locomotive from its respective GPS receiver.

25. The system of claim 21 wherein each of said plurality of controllers periodically receives

coordinates of the geographic position of its respective locomotive from its respective GPS receiver.

26. The system of claim 25 wherein each of said plurality of controllers uses said coordinates to determine the location of its respective locomotive within said plurality of sub-zones.

27. The system of claim 25 wherein each of said controllers uses said coordinates as a basis for choosing the address code of one of said plurality of repeaters to include in its next polling signal to be sent over said second half duplex wireless channel.

28. The system of claim 20 wherein each controller is assigned a time slot for sending a polling signal to its associated control unit and receiving a responsive transmission therefrom.

29. The system of claim 28 wherein each repeater further comprises a timing means and a GPS receiver.

30. The system of claim 29 wherein each repeater employs a signal from its respective GPS receiver to synchronize its timing means and monitors said second half duplex channel during each of said time slots.

31. The system of claim 30 wherein each repeater monitors said second half duplex channel for a predetermined period of time during each of said time slots.

32. The system of claim 30 wherein each repeater monitors said second half duplex channel at the beginning of each of said time slots for a predetermined period of time for a signal from one of said controllers.

33. The system of claim 31 wherein said predetermined period of time equals about seven milliseconds.

34. The system of claim 32 wherein said predetermined period of time equals about seven milliseconds.

35. The system of claim 30 wherein one of said repeaters which has retransmitted a properly addressed signal from a first of said controllers within a first time slot monitors said second half duplex channel for a predetermined period of time during a remainder of said first time slot for a responsive signal from the control unit associated with said first controller.

36. The system of claim 35 wherein the other repeaters mask off during said first time slot.

37. The system of claim 28 wherein each repeater has a memory containing an address for each of said plurality of controllers, an address for each of said control units and the time slot assignments for each of said controllers and control units.

38. A system for remotely controlling a plurality of locomotives within a geographic zone via

first and second half duplex wireless channels comprising:

a plurality of subsystems each comprising:

a controller, for mounting on-board said locomotive, comprising a transmitter, a receiver and a timing means;

a control unit comprising a receiver and a transmitter associated with said controller for receiving a polling signal from said controller and for transmitting a responsive signal containing operating commands to said controller;

wherein said timing means is synchronized by a common clock and wherein said controller is assigned a time slot for sending said polling signal to its associated control unit and receiving said responsive signal; and

a plurality of repeaters wherein each repeater has a unique address and receives signals from said controllers and control units on said second half duplex wireless channel and transmits signals to said controllers and control units on said first half duplex wireless channel.

39. The system of claim 38 wherein each of said repeaters only re-transmits on said first half duplex wireless channel those received signals containing its respective address.

40. The system of claim 38 wherein each of said controllers further comprises a memory containing coordinates of said geographic zone and a plurality of sub-zones within said geographic zone.

41. The system of claim 40 wherein each repeater is located in a different sub-zone.

42. The system of claim 38 wherein each subsystem further comprises a GPS receiver operably connected to said controller.

43. The system of claim 41 wherein each subsystem further comprises a GPS receiver operably connected to said controller.

44. The system of claim 43 wherein the controller of each subsystem periodically receives coordinates of the geographic position of its respective locomotive from its respective GPS receiver.

45. The system of claim 44 wherein the controller of each subsystem uses said coordinates to make a determination of the location of its respective locomotive within said plurality of sub-zones.

46. The system of claim 45 wherein the controller of each subsystem selects the address code of one of said plurality of repeaters to include in its next polling signal to be sent over said second half duplex wireless channel on the basis of said determination.

47. The system of claim 44 wherein the controller of each subsystem uses said coordinates as a basis for choosing the address code of one of said plurality of repeaters to include in its next polling signal to be sent over said second half duplex wireless channel.

48. The system of claim 38 wherein each repeater further comprises a timing means and a GPS receiver.

49. The system of claim 48 wherein each repeater employs a signal from its respective GPS receiver to synchronize its timing means.

50. The system of claim 49 wherein each repeater monitors said second half duplex channel during each of said time slots.

51. The system of claim 49 wherein each repeater monitors said second half duplex channel for a predetermined period of time during each of said time slots.

52. The system of claim 49 wherein each repeater monitors said second half duplex channel at the beginning of each of said time slots for a predetermined period of time for a signal from one of said controllers.

53. The system of claim 51 wherein said predetermined period of time equals about seven milliseconds.

54. The system of claim 52 wherein said predetermined period of time equals about seven milliseconds.

55. The system of claim 49 wherein one of said repeaters which has retransmitted a properly addressed signal from a first of said controllers within a first time slot monitors said second half duplex channel for a predetermined period of time during a remainder of said first time slot for a responsive signal from the control unit associated with said first controller.

56. The system of claim 38 wherein each repeater has a memory containing an address for each of said plurality of controllers, an address for each of said control units and the time slot assignments for each of said controllers and control units.

57. The system of claim 38 wherein said common clock is carried on a satellite which transmits a signal to synchronize said timing means of each controller.

58. The system of claim 38 wherein each controller transmits said polling message to its associated control units once every second and each time slot has a duration of one tenth of a second.

59. The system of claim 38 wherein each subsystem further comprises a second control unit comprising a receiver and a transmitter associated with said controller.

60. The system of claim 59 wherein an initial polling message is sent by each controller directly to its associated first and second control units over said first half duplex wireless channel.

61. The system of claim 59 wherein each controller transmits said polling message, and its associated first and second control units respond thereto, over said first half duplex wireless channel so long as said controller receives a responsive transmission from each of its associated control units.

62. The system of claim 59 wherein each controller, upon not receiving a responsive transmission to its last polling signal from either of its associated control units over said first half duplex wireless channel within said time slot, transmits a subsequent polling signal containing the address code of one of said repeaters over said second half duplex wireless channel wherein said subsequent polling signal contains a bit instruction instructing each associated control unit to transmit a response over said second half duplex wireless channel.

63. The system of claim 62 wherein each subsystem further comprises a GPS receiver operably connected to said controller.

64. The system of claim 63 wherein each controller uses information from said GPS receiver to select the address code of one of said repeaters to include in said subsequent polling signal.

65. A controller for use in a system for remotely controlling a locomotive via first and second half duplex wireless channels and a plurality of repeaters comprising:

a transmitter, a receiver, and a memory containing the coordinates of a plurality of geographic zones.

66. The controller of claim 65 wherein said memory contains predetermined repeater address assignments for each of said plurality of geographic zones.

67. A repeater for use in a system for remotely controlling a locomotive via first and second half duplex wireless channels comprising: a transmitter, a receiver, a microprocessor and a memory containing an address for each of a plurality of controllers and a plurality of control units.

68. The repeater of claim 67 wherein said memory contains a record of a plurality of time slots and a record of the time slot assignments for said plurality of controllers and said plurality of control units.

69. The repeater of claim 68 wherein said repeater monitors said second half duplex channel during each of said time slots for a signal from one of said plurality of controllers and control units.

70. The repeater of claim 68 wherein said repeater monitors said second half duplex channel during

each of said time slots for a signal from the controller or control unit assigned to each respective time slot.

71. The repeater of claim 67 further comprising a timing means and a GPS receiver.

72. The repeater of claim 68 further comprising a timing means and a GPS receiver.

73. The repeater of claim 72 wherein said timing means is synchronized by a signal from said GPS receiver.

74. The repeater of claim 73 wherein said monitors said time slots on said second half duplex channel.